

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GREGORY L. HEACOCK, GORDON B. KUENSTER and
KEVIN W. SHIMASAKI

Appeal No. 96-3577
Application 08/419,064¹

ON BRIEF²

Before JERRY SMITH, RUGGIERO and DIXON, **Administrative Patent Judges.**

DIXON, **Administrative Patent Judge.**

DECISION ON APPEAL

This is a decision on appeal from the Examiner's final rejection of claims 1-18, 20-37 and 39-49 which are all of the claims pending in this application³.

¹Application for patent filed April 10, 1995. According to appellants, this application is a continuation of application 08/133,518, filed October 7, 1993. Now abandoned.

²We note that an oral hearing was requested, but was waived by appellants in a letter filed April 19, 1999. (Paper no. 20).

³ We note that the Examiner modified the rejection in the examiner's answer. The Examiner indicated that claim 47 is allowable and that claims 4-5, 9, 15-16, 21-22, 25, 29-30, 32-36 and 46 would be

BACKGROUND

The present invention relates to a head mounted display system for viewing the displayed images/text using both eyes, but using a single display. The system uses a binocular optical system for both the right and the left eyes where the optical centerline paths for each eye are angled towards the single virtual image perceived by the user of the system. Multiple embodiments of the system are claimed emphasizing different aspects of the invention. A second embodiment is directed to a structural relationship between the display, optics and a keyboard.

Appellants have indicated that the claims do not stand or fall together and have provided separate arguments to the varied embodiments in the claims. (See brief⁴ at pages 13-14.)

Independent claim 1 is representative of a first embodiment of the invention and reproduced as follows:

1. A head mounted display system comprising a support to mount the display system on a user's head;

a single display mounted on said support for displaying video information;

allowable if rewritten into independent form.

⁴ Appellants filed a supplemental appeal brief, February 10, 1999, (Paper No. 19) to supplement the non-compliant appeal brief filed December 18, 1995, (Paper No. 12). We will refer to the arguments in the original appeal brief as simply the brief. Appellants filed a reply brief on June 24, 1996, (Paper No. 14). We will simply refer to this as the reply.

a binocular optical system for projecting an enlarged virtual image of said displayed video at a distance from the user that is less than infinity, said optical system including a right-eye optical centerline path and a left-eye optical centerline path having at least one optical element in each of said paths wherein said right-eye and left-eye optical centerline paths are angled in towards said virtual image.

Independent claim 48 is representative of a second embodiment of the invention and reproduced as follows:

48. A head mounted display and computer system comprising:

a keyboard housing a computer that generates video output signals representing video information;

a support to be worn on a user's head;

a display mounted on said support and in communication with said keyboard for displaying video information;

a binocular optical system mounted on said support for projecting an enlarged image of said displayed video at a distance from the user in the central field of view of each of the user's eyes such that said image blocks the user's view in said central field, said optical system and support maintaining the lower portion of the peripheral view of each of the user's eyes free from obstruction to allow the user to view said keyboard by shifting his vision from said projected image of said video information downward;

said keyboard housing including a mounting surface for said support with display and optical system when said head mounted display is not in use.

The prior art references of record relied upon by the Examiner in rejecting the appealed claims are:

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|--------------------|-----------|---------------|
| Heilig ('156) | 2,955,156 | Oct. 04, 1960 |
| Ricks ('856) | 4,190,856 | Feb. 26, 1980 |
| Schoolman ('555) | 4,559,555 | Dec. 17, 1985 |
| Dahl et al. ('278) | 4,982,278 | Jan. 01, 1991 |
| Diner ('236) | 5,065,236 | Nov. 12, 1991 |
| Staveley ('567) | 5,093,567 | Mar. 03, 1992 |
| Kawamura ('569) | 5,153,569 | Oct. 06, 1992 |
| Schoolman ('957) | 5,281,957 | Jan. 25, 1994 |

(Filed Jul. 10, 1991)

Claims⁵ 1-3, 6-8, 10-14, 17, 18, 20, 23-24, 26-28, 31, 37, 39-45 and 48-49 stand rejected under 35 U.S.C. § 103 as being unpatentable as set forth in the Examiner's answer, mailed April 26, 1996, (Paper No. 13). Specifically, claims 48 and 49 are rejected under 35 U.S.C. § 103 as being unpatentable over Schoolman ('957).

Claims 1, 2, 6-8, 10-12, 14, 18, 23, 24, 26-28 and 37 are rejected under 35 U.S.C. § 103 as being unpatentable over Schoolman ('957) in view of Diner ('236).

Claims 3, 13, 20, 31 and 39 are rejected under 35 U.S.C. § 103 as being unpatentable over Schoolman ('957) in view of Diner ('236) as applied to claim 1, further in view of Heilig ('156).

⁵ In the Examiner's answer, the Examiner indicated that claim 47 was allowable over the prior art and that claims 4, 5, 9, 15, 16, 21, 22, 25, 29, 30, 32-36 and 46 would be allowable if rewritten in independent format.

Claims 40 and 42-45 are rejected under 35 U.S.C. § 103 as being unpatentable over Dahl ('278) in view of Schoolman ('555).

Claim 17 is rejected under 35 U.S.C. § 103 as being unpatentable over Schoolman ('957) in view of Diner ('236) as applied to claim 1, further in view of Staveley.

Claim 41 is rejected under 35 U.S.C. § 103 as being unpatentable over Dahl ('278) in view of Schoolman ('555) as applied to claim 40, further in view of Staveley.

Rather than reiterate the conflicting viewpoints advanced by the Examiner and the appellants, we make reference to the briefs and answer⁶ for the details thereto.

OPINION

After a careful review of the evidence before us we disagree with the Examiner that claims 1-3, 6-8, 10-14, 17, 18, 20, 23-24, 26-28, 31, 37, and 39-45 are properly rejected under 35 U.S.C. § 103 and we will not sustain the rejection of claims 1-3, 6-8, 10-14, 17, 18, 20, 23-24, 26-28, 31, 37, and 39-45. We agree with the Examiner that claims 48 and 49 are properly rejected under 35 U.S.C. § 103 and we will sustain the rejection of claims 48 and 49.

As a consequence of our review, we make the determinations which follow.

⁶ The Examiner responded to the brief with an Examiner's answer mailed April 26, 1996. (Paper no. 13). We will refer to this as the answer. The Examiner mailed a letter dated October 16, 1997 (Paper no. 17) indicating entry of the reply brief and that no further comment was necessary and clarifying that the Jones reference (3,670,097) was not used in the rejection of the claims.

REJECTION OF CLAIMS
1- 3, 6- 8, 10- 14,17, 18, 20, 23- 24, 26- 28, 31, 37, and 39- 45
UNDER 35 U.S.C. § 103

With respect to the rejection of independent claim 1, we find that the Examiner has not met the burden of setting forth a *prima facie* case of obviousness in rejecting claim 1. As pointed out by our reviewing court, we must first determine the scope of the claim. "[T]he name of the game is the claim." *In re Hiniker Co.*, 150 F.3d 1362,1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998). The claim sets forth "a single display mounted on said support for displaying video information" and "a binocular optical system for projecting an enlarged virtual image . . . that is less than infinity." Claim limitations are to be given their broadest reasonable interpretation consistent with the specification. See *In re Yamamoto et al.*, 740 F.2d 1569, 1571, 222 USPQ 934, 936 (Fed. Cir. 1984). In the specification, as originally filed, appellants disclose only embodiments with a single display and provide argument thereto in the amendment filed July 25, 1994 and in the brief at pages 11 and 14-33 that the claimed invention is specifically limited to a single display. To interpret the claim limitation "single display" to be met by a prior art teaching of two displays would not be a reasonable interpretation of the claim limitation as the Examiner has argued in the answer at pages 6 and 11-12.

The claim language is clear that one and only one display is present in the claimed

invention for display to both the left and right eyes via the binocular optical system.

Appellants specifically argue that Schoolman ('957) does not teach nor fairly suggest the use of a single display in a head mounted display system. Nor does the reference address a binocular optical system for projecting an enlarged virtual image of said displayed video at a distance from the user that is less than infinity. (See brief at pages 14-18.) The prior art references applied against claims 1, 18, 31, 37, 39 and 40 do not teach this claimed limitation because they do not relate to the **single** display. The Examiner has not adequately addressed these limitations in the rejection of claim 1 nor in the argument section of the Examiner's answer. The Examiner has not provided a convincing line of reasoning why and how it would have been obvious to one of ordinary skill in the art at the time of the invention to use a single display and how the skilled artisan would have embodied the optics for the **single** display. Appellants also argue that Diner does not provide the missing teachings nor provide a motivation to combine the teachings. (See brief at pages 14-17.) We agree with appellants.

A review of the Heilig reference applied against independent claims 31 and 39, in combination with Schoolman ('957) and Diner, similarly does not supply the missing teachings concerning the single display/source of video information and the binocular optical system, taken as a whole.

The Dahl and Schoolman ('555) references also do not teach the single display and

the single reflector and optics for both eyes relative to the single display, as set forth in the language of independent claim 40.

The Examiner has discussed a reference to Jones ('097) in the answer at page 12. The Examiner stated in the paper mailed October 16, 1997, (Paper No. 17) that Jones forms no part of the rejection. Therefore, we do not consider this reference in our review in this decision.

Since all the limitations of independent claims 1, 18, 31, 37, 39 and 40 are neither taught nor suggested by the applied prior art, we cannot sustain the Examiner's rejection of appealed claims 1, 18, 31, 37, 39 and 40 under 35 U.S.C. § 103.

Since all the limitations of independent claims 1, 18, 31, 37, 39 and 40 are neither taught nor suggested by the applied prior art, we cannot sustain the Examiner's rejection of appealed claims 2-3, 6-8, 10-14, 17, 20, 23-24, 26-28, and 42-45 which depends therefrom, under 35 U.S.C. § 103.

**REJECTION OF CLAIMS
CLAIMS 48 AND 49 UNDER 35 U.S.C. § 103**

Independent claim 48 does not contain the same detail with respect to the limitations of the single display and the binocular optics as discussed above with respect to claims 1, 18, 31, 37, 39 and 40. Appellants argue that it would not have been obvious to one of ordinary skill in the art at the time of the invention to provide a

specific mounting surface for a head mounted display unit when it is not in use as claimed. (See brief at pages 28-29.) We disagree with appellants. The Examiner has set forth a *prima facie* case of obviousness in detail and provided a convincing line of reasoning starting from the teaching of Schoolman and in combination with common sense reasoning why it would have been obvious to one of ordinary skill in the art at the time of the invention to have a mounting surface on the keyboard for when the display and optical system is not in use. (See answer at pages 3-4.) We agree with the Examiner.

Appellants argue that the Examiner has used "classic hindsight" (brief at page 28) in the rejection of claims 48 and 49. We disagree as discussed above. We observe that an artisan must be presumed to know something about the art apart from what the references disclose. See **In re Jacoby**, 309 F.2d 513, 516, 135 USPQ 317, 319 (CCPA 1962)), and the conclusion of obviousness may be made from "common knowledge and common sense" of the person of ordinary skill in the art. See **In re Bozek**, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969). Moreover, skill is presumed on the part of those practicing in the art. See **In re Sovish**, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

CONCLUSION

To summarize, the decision of the Examiner rejecting claims 1- 3, 6- 8,

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10-14,17, 18, 20, 23- 24, 26- 28, 31, 37, and 39- 45 under 35 U.S.C. § 103 is reversed.

The decision of the Examiner rejecting claims 48 and 49 under 35 U.S.C. § 103 is affirmed.

The decision of the Examiner is affirmed-in part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

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| JERRY SMITH |) | |
| Administrative Patent Judge |) | |
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| |) | BOARD OF PATENT |
| JOSEPH F. RUGGIERO |) | APPEALS AND |
| Administrative Patent Judge |) | INTERFERENCES |
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